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SOME AFRICAN BEES

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The bees recorded below were obtained by the Cockerell–Mackie–Ogilvie Expedition of 1931–1932, unless the contrary is stated. All the holotypes will be found in the American Museum.

CROCISA

Crocisa brachyaspis, new species

FEMALE.—Length about 9 mm. (abdomen contracted), anterior wing 9 mm.; black, without metallic tints; pubescent markings white; hind femora unarmed. Exceedingly like *C. valvata* Brauns, but smaller, with the scutellum smaller and shorter, and with a median groove; the shape of the margin of the scutellum is as in *C. valvata*, the angle being very wide, the margins between the incision and the lateral points are quite straight, the points are practically rectangular. The markings of the thorax are reduced, but their hair is long; median stripe rather narrow, about half length of mesothorax; a pair of white spots on anterior border of mesothorax, remote from median stripe and from lateral bands; lateral bands confined to the vicinity of tegulae, broad in front, linear behind; posterior spots rather large, far from the other markings; mesothorax well punctured. Axillae and scutellum wholly without white hair, but long white hair beneath scutellar incision. Upper part of mesopleura with long white hair, but a bare space in middle, the surface of which is dull; lower half coarsely punctured and shining, with much white hair on its lower portion. The abdominal markings are like those of *C. valvata*, except that the marks on first tergite have no basal extensions mesad, and the very broad bands at sides of second have merely an angular extension at each side; the second and third sternites have white hair at sides; the fifth sternite is keeled in middle, and has some thin whitish hair. The legs, as in *C. valvata*, have white hair on basitarsi; the white hair on hind tibiae occupies about half of the outer side, the division being very oblique. The tegulae and wings resemble those of *C. valvata*, but there is no patch of white hair at base of wings, next to tegulae.

Orange Free State: Ficksburg, altitude 5347 ft., Feb.–March, 1932 (J. Ogilvie). This is so like *C. valvata* that I at first took it for a variety, but it has numerous characters which indicate its specific rank. There is some resemblance to *C. oxyaspis* Cockerell, which has similar marks on first tergite, but is larger, with sharp points on scutellum.

Crocisa stellifera, new species

MALE.—Length about 11 mm., anterior wing 8; tegument black, the abdomen rather long fusiform; pubescent markings very pale blue, most distinctly blue on abdomen, very slightly tinged with blue on thorax, white on head and outer side of

tibiae; face rather narrow, eyes gray, clypeus prominent; third antennal joint slightly longer than fourth; white occipital fringe complete; mesothorax with light band on anterior and lateral margins, a rather broad median band (not reaching posterior end), two large round spots, and two large triangular marks posteriorly, not continuous with lateral bands, all these markings sharply defined; axillae with a broad spot on inner margin; scutellum with a very wide incision, and disc with three marks in a transverse row, the middle one star-like, with four points, not reaching incision, the lateral ones very large, with the basal part of outer margin on edge of scutellum; upper half of mesopleura with dense white hair, lower half bare, shining, well punctured, but with a small round spot of pubescence; a long white fringe from beneath scutellar incision; tegulae black, with a small spot of white hair in front, and a larger one behind; wings fuliginous, with hyaline spots at end of cells; dense white hair on outer side of middle tibiae with a large elongate black patch on apical part; hind tibiae externally black at end, and with black spots on the apical part of the white; tarsi without light hair; first tergite with basal band very narrowly or rather broadly interrupted, the apical band rather broadly interrupted; bands on the other tergites more broadly interrupted, but the intervals less than a third of the margin; sixth tergite with a white spot on each side; apical plate narrow, truncate, with rectangular corners, the apical margin slightly concave; venter black, with a little pale pubescence at sides of second and third sternites. The cotype is partly denuded, so that the star-like spot in middle of scutellum has almost entirely disappeared. The last sternite has no pit.

Belgian Congo (Katanga): Dilolo, July 24–27, 1931, two males (Cockerell). The very short description of *C. tschoffeni* Vachal, from Boma, appears to indicate a species with entirely black axillae, more strongly marked venter, and last sternite foveolate. What I have from the British Museum as *C. tschoffeni* (from N. E. Rhodesia) has white markings, and is certainly distinct. Meyer treats *C. tschoffeni* as a white-haired species. *C. stellifera* differs from *C. luangvensis* Cockerell and Mackie by the anterior marginal band of mesothorax being continuous right across, the spotted axillae, the shape of the spots on scutellum, anterolateral extension of marks on second tergite rounded (not angular), much darker wings, and tarsi without white hair.

I also collected a female *C. stellifera* at Dilolo. The last sternite is keeled, and the hind femora are unarmed.

Crocisa valvata candida (Cockerell)

Natal: National Park, March (J. Ogilvie).
Orange Free State: Gum Tree, Feb. 29 (J. Ogilvie).

Crocisa calceata Vachal

Cape Province: Graaff-Reinet, Oct. (A. Mackie, Cockerell); Huguenot, Feb. (J. Ogilvie).

Natal: Ingogo, March (J. Ogilvie).

Transvaal: Louis Trichardt, April (L. Ogilvie).

Southern Rhodesia: Vumba, Umtali, May (L. Ogilvie). The axillae are covered with pale hair.

I have a male from Dilolo, Katanga, July (Cockerell), which I had placed as a variety of *C. calceata*, but on reëxamination I must refer it to *C. cyanescens* Cockerell. It is larger than *C. calceata*, and there is a patch of light hair above the scutellar incision. A little light hair can be seen in this position in the type of *C. cyanescens*.

Crocisa polysticta (Cockerell and Mackie)

Cape Province: Graaff-Reinet, Oct. 24–27, one female (Cockerell).

Southern Rhodesia: Jesse, April, two females (A. Mackie).

The posterior part of mesothorax in these specimens is very smooth and shining.

Crocisa meripes Vachal

Belgian Congo (Katanga): Tenke, July–Aug. (J. Ogilvie).

In a future revision of *Crocisa*, it will be desirable to take the genitalia into account. I give figures of the male genitalia of *C. meripes* Vachal, *C. picta* Smith, *C. calceata* Vachal, and *C. maculiscutis* Cameron, drawn by Miss Edith Stice. It will readily be seen that they present good differential characters. (Figs. 1 to 4.)

TETRALONIA

Tetralonia nanula Cockerell

The type female, from Oudtshoorn, has olive-green eyes, and the hair of thorax above is slightly suffused with brown. Four females from Oudtshoorn (J. Ogilvie) and two from Uitenhage (J. Ogilvie, W. P. Cockerell) differ in having brown eyes. A female from Ceres, Cape Province, February (J. Ogilvie) has green eyes, and much dark brown, almost black, hair on mesothorax and scutellum. Cotype males have green eyes, but six from Uitenhage (J. Ogilvie) and one from Oudtshoorn (J. Ogilvie), mounted since, all have brown eyes. It does not seem probable that more than one species is involved, but further studies in the field are desirable.

Tetralonia nubilis Cockerell

Cape Province: Van Rhyn's Pass, Nov., 1931, ♀ (Cockerell).

I give figures of the maxillae and labial palpi of females of *T. nanula*

(from Oudtshoorn) and *T. atriventris* Smith (from Illinois, collected by Robertson). The drawings were made by Miss Margaret Sanders. We examined the mouth parts in detail, but could find no generic differences between these species from such remote parts of the world. There is a very good specific difference in the relative lengths of the first two joints of the labial palpi. (Figs. 5 and 6.)

SPHECODES

Sphecodes arnoldi Blüthgen

Southern Rhodesia: Shangani, De Beers Ranch, May 8–12, 1932, male (J. Ogilvie). This appears to agree with Blüthgen's description and figures, except that it has no black spot on first tergite. Blüthgen's holotype is a female from Saw Mills, Southern Rhodesia. In the British Museum I found a type male, of which I noted: stout for a male; wings not dark; antennae dark red, but legs black; first tergite shining dark red, with a large black patch in center; second tergite broadly red at sides of base, the rest black. I greatly doubt the identity of this with the Shangani insect, but suppose the latter to be true *S. arnoldi*. It has the first two tergites entirely bright chestnut red. The first three sternites are red, the third with a dusky spot at each side. It is significant that Blüthgen had no males from Southern Rhodesia, but only from Mossel Bay, on the south coast of the Cape Province, and Queenstown, 154 miles inland from East London.

Sphecodes dilutus, new species

FEMALE.—Length about 9 mm., anterior wing 6.5; black, moderately robust, with the abdomen entirely clear red, above and below; legs dark brown, with red spurs; tegulae large, pale testaceous, with very dark brown base; wings dilute reddish-fuliginous, paler basally; stigma and nervures dark brown. Head very broad; face with white hair, very dense and pure white at sides, thin over the densely punctured clypeus; labrum black; mandibles bidentate, dusky red, the apical part blackened; scape long; flagellum very thick, black above, dark brown beneath; front and vertex densely punctured; a smooth space laterad of each lateral ocellus; tubercles and sides of prothorax fringed with dense white tomentum; mesothorax and scutellum shining, very coarsely punctured, the scutellum with a smooth discal space; a band of white tomentum along hind border of scutellum; area of metathorax with strong irregular plicae, with irregular cross-ridges, and near the base a continuous but sinuous cross-ridge; mesopleura very coarsely sculptured; basal nervure not far from nervulus; hind wing with ten hooks; abdomen shining, finely but distinctly punctured; broad apical margin of first tergite minutely but very distinctly punctured, but margin of the following tergites impunctate; apical plate of abdomen small.

Natal: Greytown, Oct. 20, 1931 (Alice Mackie). Runs in Blüthgen's table to *S. hagensi fuscipes* Blüthgen, but is easily distinguished by

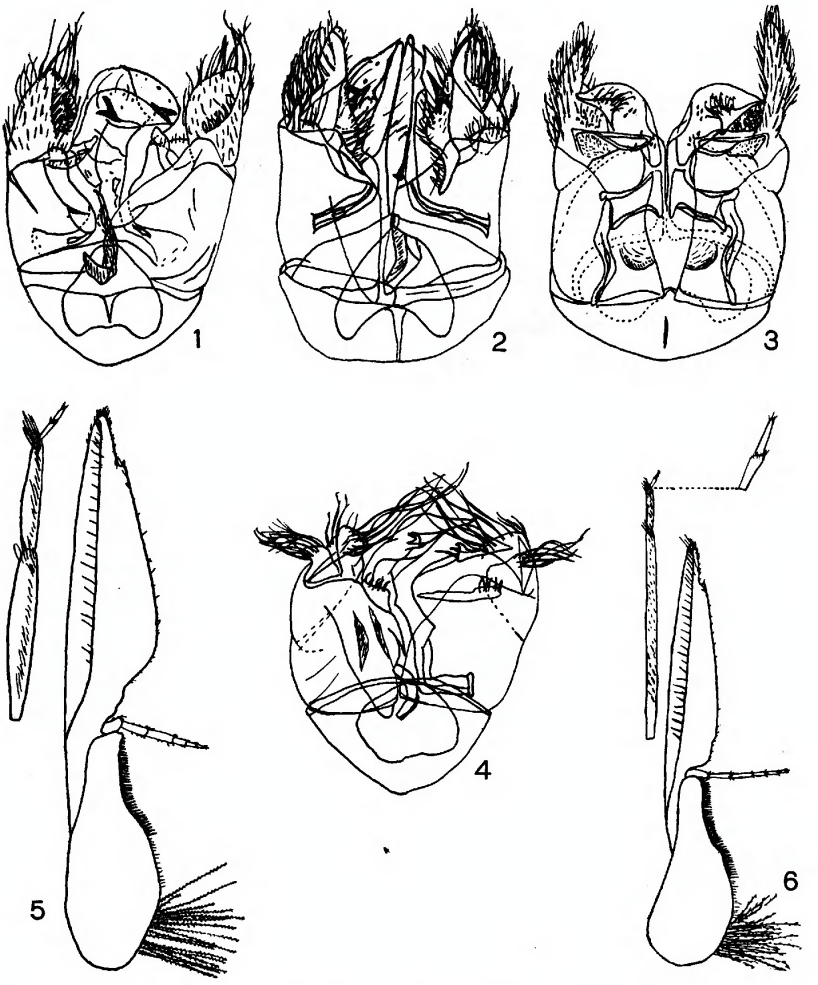

Fig. 1. *Crocisa meripes* Vachal, male genitalia.
Fig. 2. *Crocisa picta* Smith, male genitalia.
Fig. 3. *Crocisa maculiscutis* Cameron, male genitalia.
Fig. 4. *Crocisa calceata* Vachal, male genitalia.
Fig. 5. *Tetralonia nanula* Cockerell, maxilla and labial palpi of female.
Fig. 6. *Tetralonia atriventris* Smith, maxilla and labial palpi of female.

the much paler wings. From *S. tuckeri* Friese it is known by the well-punctured abdomen, and large pale tegulae. The dark legs and paler wings distinguish it from *S. hagensi* Ritsema, which also occurs at Greytown.

Sphecodes libericus, new species

MALE.—Length about 5 mm., anterior wing a little over 4; black, with the mandibles, labrum, knees, and anterior tibiae in front red; first tergite at sides and very broadly at apex (the large black area trilobed), second entirely, third except apex and a large black median patch (posteriorly connected with apical band), bright chestnut-red; first three sternites red (except margin of third), the others dark brown. Face very broad, densely covered with pure white hair; front and vertex coarsely and densely punctured; labrum with a median pit; mandibles acute, simple, with five long curled hairs on upper margin; scape very short; flagellum long and thick, very dark brown, the joints minutely reticulated, with a granular area covering the lower surface only, from the fourth antennal joint to apex, this modified area, as seen under microscope, pale reddish apically; thorax and legs with scanty dull white hair; mesothorax and scutellum shining, with coarse punctures; mesopleura dull and coarsely rugose; extreme base of metathorax with a narrowly crescentic dull rugose area, which under microscope is seen to be finely plicate, and bounded in front by a band of dense pure white tomentum; this is followed by a large area with coarse vermiform rugae, the intervals shining; then follows a zone of large square pits, bordering the strongly punctured apical truncation; tegulae testaceous, broadly dark brown at base, not punctured; wings hyaline, with the region beyond the cells dilute brownish; stigma pale dull brown, nervures brown; second cubital cell extremely narrow; hind wings with seven hooks; abdomen strongly punctured, the extreme margins of the tergites smooth; apical plate very broadly rounded, subtruncate, its basal portion with strong p_nctures; last sternite with a large round shallow pit.

Liberia: Memeh Town, Aug. 29, 1926 (J. Bequaert). It is marked, "sent to Meyer," but it was not described by that author. It resembles somewhat *S. togoanus* Strand, but the antennae rather resemble those of the much larger *S. confusus* Blüthgen. *S. punctatus* Sichel is allied but considerably larger, and is from South Africa.

The following notes made at the British Museum may facilitate the determination of African *Sphecodes.*

S. algoensis Blüthgen. Male; Algoa Bay. Fairly large male with black, strongly moniliform antennae; wings dilute fuliginous; area of metathorax with strong plicae; first tergite black and strongly punctured, with apex broadly blood-red; second blood-red; third broadly red at sides and narrowly at base; genitalia bright red.

S. tuckeri Friese. A female from Okahandja (Turner), identified as *S. tuckeri,* cannot be distinguished from the type of *S. iridescens* Cockerell (*iridipennis* Cameron).

S. braunsi Blüthgen. Small species; female with red mandibles, short flagellum red beneath; first two tergites and base of third red, beyond that black; stigma sepia. Male similar, flagellum red beneath except at base.

S. oneili Cameron. Female superficially like *S. eugnathus* Blüthgen, with first two tergites the same red, the rest black; but easily distinguished by clear red antennae and red legs (black in *S. eugnathus*).

S. capensis Cameron. Male. Much larger than male *S. braunsi*, and easily distinguished by first tergite black, with red hind margin; flagellum long, very dark brown beneath. Much smaller than male *S. punctatus* Sichel.

S. propinquus Blüthgen. Male. Large, with strongly reddish fuliginous wings; scutellum with very coarse punctures; abdomen black with apical margin of first tergite and base and sides of second deep red.

S. quadrimaculatus Blüthgen. Large female with extremely broad face, and chestnut red abdomen. Wings brownish, but not at all dark. Aspect of *S. rufichelis tibialis* Blüthgen, but that has dark fuliginous wings, and lacks the patches of dense pure white hair at sides of face.

S. nigeriae Blüthgen. Male type has a long narrow, strongly punctured abdomen; face broad, with dense pure white hair; dense pure white tomentum on tubercles, extending to adjacent sides of prothorax; mesothorax very strongly punctured; tegulae testaceous; legs bright red, but antennae black, the flagellum very strongly moniliform. *S. punctatus* differs at once by black hind femora and tibiae, and black apex and base of abdomen.

THRINCHOSTOMA

Thrinchostoma undulatum, new species

MALE.—Length about 10 mm., anterior wing 7.6; black, the clypeus with a narrow white edge, a white band across labrum, hind tibiae apically with a large white shining lamina, basitarsi white with the end black; tongue long and linear, mentum and submentum extremely long, so that the mouthparts can be produced to nearly three times the length of head; palpi light red; head with white pubescence, dense on sides of face, long on cheeks; snout seen from in front fully half as long as eye; clypeus shining; scape black, flagellum pale reddish beneath, the joints swollen; antennae 12-jointed; modified areas on joints (covered with minute stiff hairs) beginning at apex of eighth, and continuing to include eleventh, the sides of the modified areas on each joint angularly deeply excised, so that the margin of the modified area of the flagellum is strongly undulate; last joint straight on one side, very obliquely truncate on the other, as Blüthgen figures for *T. telekii;* thorax with the usual short hair, grayish-white at sides and behind, but very pale fulvous dorsally; mesothorax dull, very densely punctured; tegulae pale rufotestaceous; wings dusky hyaline, stigma and nervures dusky reddish; second cubital cell higher than broad; black hair-patch rather large, transverse, its greatest diameter about or nearly equal to upper side of second cubital cell; legs with pale hair, spurs very pale; hind femora without any tooth at base, but the trochanter angular beneath, though not quite so sharply so as in *T. telekii;* white lamina on hind tibia broader and shorter than in *T. telekii;* abdomen dullish, except the shining hind margins of tergites, the apical depressions hyaline, and with the usual short silvery pubescence; venter polished, except fifth sternite, which presents a very large dull transverse bean-shaped area, having a pale spot next to the shallow apical emargination; the strongly arched margin of fourth sternite has beneath its edge in the middle a crescentic lamina (or it could be described as two divergent teeth); at sides of apical part of fifth sternite are long white hairs, projecting caudad; the last tergite is polished, and ridged in middle.

Belgian Congo (Katanga): Tenke, July 30–Aug. 9, 1931 (Alice Mackie).

In Blüthgen's table this falls nearest to *T. telekii* Blüthgen, from the Aberdare Mountains, in Kenya. *T. telekii* agrees in the 12-jointed antennae of the male, but differs in several particulars, especially in the pattern of the modified area on flagellum. Compared with *T. orchidarum* Cockerell, *T. undulatum* is less robust, with the clypeus more produced, and much less yellow at end. Male *T. orchidarum* has 13-jointed antennae.

Thrinchostoma umtaliense, new species

MALE.—Length about 11 mm., anterior wing 8; black, with long narrow abdomen, the tergites with the usual silvery hair in the depressions, but the last tergite with black hair; labrum, and broad apical band on clypeus, cream-color; basitarsi creamy-white, small joints of tarsi somewhat reddish; hind tibiae with a large white apical lamina; snout produced, its length about half that of the very black eyes; clypeus shining at base, but apical part dullish, with scattered large punctures; antennae long, 13-jointed; scape black, rather stout, dull, strongly punctured, and minutely lineolate; flagellum dull chestnut-red beneath; antennae joints 8 to 10 distinctly bulging beneath, last joint flattened and curved at end; modified areas beginning on eighth joint, consisting of large rounded patches, occupying less than half the joint, with truncate base on suture; hair of thorax abundant, very faintly yellowish dorsally; mesothorax and scutellum dull; tegulae bright ferruginous; wings reddish hyaline, stigma and nervures red; black hair-patch elongate, not quite as long as upper side of second cubital cell; hind trochanters angularly produced; hind femora simple; abdomen much as in *T. undulatum*, the fifth sternite with the same large flattened dull surface, but with a shining protuberance at apex, and at extreme base with a short transverse shining band, at each end of which is a small spine or tooth; the apical margin has a fringe of moderately long hairs at sides, but none across the middle.

Southern Rhodesia: Christmas Pass, Umtali, May 20–21, 1932 (J. Ogilvie). Allied to *T. kandti* Blüthgen, but the pattern of the antennae is quite different, and there are other differences, such as the entirely different color of the tegulae. *T. kandti* occurs in Uganda and near Lake Kivu.

I found many types of African *Thrinchostoma* in the British Museum, and took occasion to make the following table.

1.—Base of abdomen red.....2.
Base of abdomen dark.....4.
2.—First two tergites shining, with black bands, greatly broadened in middle; first recurrent nervure joins third cubital cell some distance from base; tegulae red (W. Ankole, Uganda).....*sjostedti rufescens* Friese (det. Blüthgen).
First two tergites without such bands.....3.
3.—First two tergites narrow, bright terra-cotta red; first recurrent nervure very

near base of third cubital cell; male.....*petersi* Blüthgen (type).
First two tergites reddish honey-color; wings reddish; legs with much red hair; female.....*ugandae* Blüthgen (type).
4.—Males; hind tibiae with a cream-colored apical lobe.....5.
Females; hind legs simple.....7.
5.—Hair-spot on anterior wings large; stigma extremely pale; flagellum crenulate beneath; hind basitarsi white; hind margins of tergites broadly pallid. *telekii* Blüthgen (type).
Hair-spot on anterior wings small.....6.
6.—Smaller, with very red wings; no red hair on thorax; last joint of flagellum curved and pointed.....*kandti* Blüthgen (type).
Larger; thorax with fulvous hair; legs red; flagellum thick, last joint normal. Cockerell. *lemuriae*
7.—Larger; wings very red, second cubital cell about square; tergites 3 and 4, in lateral view, showing fulvous velvety tomentum..*silvaticum* Blüthgen (type).
Smaller; wings clearer and not so red; second cubital cell higher than long....8.
8.—Abdomen with only black and white hair; cheeks with pure white hair; hind margins of tergites broadly whitened.....*kandti* Blüthgen.
Abdomen and cheeks with pale fulvous hair; basal half of scape bright red. *mwangai* Blüthgen (type).

T. sakalavum Blüthgen, 1930, from Madagascar, runs to the vicinity of *T. telekii;* stigma red; legs clear red; hind basitarsi very pale yellow. It is close to *T. lemuriae,* with the same saddle of red tomentum on tergites 2 and 3, but has silvery white hair on apical depressions of tergites, scape red (black in *T. lemuriae*).

T. serricorne Blüthgen (Madagascar) is wholly different, being all clear red.

T. nomiaeformis Cockerell (male type) has no hair spot on wings; first recurrent nervure meets second intercubitus; basal nervure falls well short of nervulus.

T. torridum Smith (female type) has first recurrent nervure meeting second intercubitus; first two tergites red at base and apex.